

VOICE APPLIANCE

BACKGROUND

[0001] The present invention relates to the Internet of Things (IoT).

SUMMARY

[0002] In one aspect, an Internet of Thing (IoT) device includes a body and sensors including a camera and an accelerometer; a processor; and a wireless transceiver coupled to the processor.

[0003] Implementations/applications of the above aspect may include one or more of the following. The ability to network embedded devices with limited CPU, memory and power resources means that IoT finds applications in nearly every field. Such systems could be in charge of collecting information in settings ranging from natural ecosystems to buildings and factories, thereby finding applications in fields of environmental sensing and urban planning. IoT systems could also be responsible for performing actions, not just sensing things. Intelligent shopping systems, for example, could monitor specific users' purchasing habits in a store by tracking their specific mobile phones. These users could then be provided with special offers on their favorite products, or even location of items that they need, which their fridge has automatically conveyed to the phone. Additional examples of sensing and actuating are reflected in applications that deal with heat, water, electricity and energy management, as well as cruise-assisting transportation systems. Other applications that the Internet of things can provide is enabling extended home security features and home automation.

[0004] Thus, the Internet of things creates an opportunity to measure, collect and analyze an ever-increasing variety of behavioral statistics. Cross-correlation of this data could revolutionize the targeted marketing of products and services. Big data and the IoT work in conjunction. From a media perspective, data is the key derivative of device interconnectivity, whilst being pivotal in allowing clearer accuracy in targeting. The Internet of things therefore transforms the media industry, companies and even governments, opening up a new era of economic growth and competitiveness. The wealth of data generated by this industry (i.e. big data) will allow practitioners in advertising and media to gain an elaborate layer on the present targeting mechanisms used by the industry.

[0005] Environmental monitoring applications of the IoT typically use sensors to assist in environmental protection by monitoring air or water quality, atmospheric or soil conditions, and can even include areas like monitoring the movements of wildlife and their habitats. Development of resource constrained devices connected to the Internet also means that other applications like earthquake or tsunami early-warning systems can also be used by emergency services to provide more effective aid. IoT devices in this application typically span a large geographic area and can also be mobile.

[0006] Monitoring and controlling operations of urban and rural infrastructures like bridges, railway tracks, on- and offshore-wind-farms is a key application of the IoT. The IoT infrastructure can be used for monitoring any events or changes in structural conditions that can compromise safety and increase risk. It can also be used for scheduling repair and maintenance activities in an efficient manner, by coor-

dinating tasks between different service providers and users of these facilities. IoT devices can also be used to control critical infrastructure like bridges to provide access to ships. Usage of IoT devices for monitoring and operating infrastructure is likely to improve incident management and emergency response coordination, and quality of service, up-times and reduce costs of operation in all infrastructure related areas.

[0007] Digital control systems to automate process controls, operator tools and service information systems to optimize plant safety and security are within the purview of the IoT, but it also extends itself to asset management via predictive maintenance, statistical evaluation, and measurements to maximize reliability. Smart industrial management systems can also be integrated with the Smart Grid, thereby enabling real-time energy optimization. Measurements, automated controls, plant optimization, health and safety management, and other functions are provided by a large number of networked sensors.

[0008] The term IIoT (Industrial Internet of Things) is often encountered in the manufacturing industries, referring to the industrial subset of the IoT. IIoT in manufacturing could generate so much business value that it will eventually lead to the fourth industrial revolution, so the so-called Industry 4.0. It is estimated that in the future, successful companies will be able to increase their revenue through Internet of things by creating new business models and improve productivity, exploit analytics for innovation, and transform workforce. Integration of sensing and actuation systems, connected to the Internet, is likely to optimize energy consumption as a whole. IoT devices will be integrated into all forms of energy consuming devices (switches, power outlets, bulbs, televisions, etc.) and be able to communicate with the utility supply company in order to effectively balance power generation and energy usage. Such devices would also offer the opportunity for users to remotely control their devices, or centrally manage them via a cloud based interface, and enable advanced functions like scheduling (e.g., remotely powering on or off heating systems, controlling ovens, changing lighting conditions etc.). Besides home based energy management, the IoT is especially relevant to the Smart Grid since it provides systems to gather and act on energy and power-related information in an automated fashion with the goal to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity. Using metering infrastructure (AMI) devices connected to the Internet backbone, electric utilities can not only collect data from end-user connections, but also manage other distribution automation devices like transformers and reclosers.

[0009] IoT devices can be used to enable remote health monitoring and emergency notification systems. These health monitoring devices can range from blood pressure and heart rate monitors to advanced devices capable of monitoring specialized implants, such as pacemakers Fitbit electronic wristbands or advanced hearing aids. Some hospitals have begun implementing "smart beds" that can detect when they are occupied and when a patient is attempting to get up. It can also adjust itself to ensure appropriate pressure and support is applied to the patient without the manual interaction of nurses. Specialized sensors can also be equipped within living spaces to monitor the health and general well-being of senior citizens, while also ensuring that proper treatment is being administered and assisting